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The Southern African species of Neminidae (Diptera: Schizophora)

by

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ABSTRACT

The world fauna of the rarely collected family Neminidae, and the known biology of some of its species are reviewed. The apparent rarity and recognition of the southern Africa species are discussed. A key to the two southern African genera and four species is presented. *Ningulus simatus* McAlpine, 1983 (Eastern Cape, South Africa) is redescribed based on additional material. *Ningulus macalpinei* sp. n. (collected from the leaves of *Strelitzia nicolai* Regel & Koern), is described from the Chimanimani Mountains of eastern Zimbabwe. The genus *Nemo* McAlpine, 1983, is recorded from the Afrotropical Region for the first time; two new species are described: *N. capensis* from the southwestern Eastern Cape coast and *N. zuluensis* (collected from the leaves of *S. nicolai*) from the northern KwaZulu-Natal coast. Unique character states of southern African *Nemo* species are discussed. Dorsal and profile views of the head, and the wing, and the male terminalia, are illustrated for each species.

INTRODUCTION

The Neminidae is one of the most recently described acalyptrate families in the afrotropical fauna. The group was first recognised by McAlpine (1983) in the Australian fauna, albeit as a subfamily of the Aulacigastridae (Asteioidea). McAlpine described two genera, namely *Nemo* (eastern Australia) and *Ningulus* (South Africa); he later (1985) described an additional species of *Nemo* from Papua New Guinea. Adults of the Australian species have been observed and collected on the leaves of the araceous plant *Alocasia*, the bark of *Eucalyptus*, and the trunk of an *Angophora* tree. Freidberg (1994) formally raised the Neminidae to family rank, and described three new species as well as the genus *Nemula*, all from Madagascar; he also provided a key to the three genera of Neminidae. *Nemula* has been collected from the leaves of *Ravenala madagascariensis* Gmel., and is endemic to Madagascar. Barraclough (1994) reported on the rarity and conservation status of the southern African fauna. The description of three new species of Neminidae from southern Africa in this paper, raises the number of named species in the family to 13.

Neminidae are rarely encountered, minute flies (all southern African species are less than 2.5 mm long) which have long been overlooked in the southern African fauna, partly because they seem to occur at relatively few localities, and perhaps also have a restricted emergence time. All southern African specimens have been collected between late September and mid-December, and it is probable that adults of the family are most abundant at particular localities in spring or early summer. Two of the four southern African species have been collected from leaves of the wild banana *Strelitzia* *nicolai* Regel & Koern. Despite intensive efforts over the last eighteen months, visiting numerous suitable localities in KwaZulu-Natal (the Durban metropolitan area, as far south as the Eastern Cape border, and as far north as the St Lucia estuary), I have been unable to add to the material of *Nemo zuluensis* sp. n. collected by Dr B. Stuckenberg at Richard's Bay (see below). *N. zuluensis* is the only southern African species which has not been collected from afromontane vegetation, but see also Duxbury & Barraclough (1994: 36).

Nemo was unknown from the southern African fauna when I published my key to the regional acalyptrate families (Barraclough 1995), and it is unfortunately not possible to identify the genus to family using this key. This is because the newly recorded *Nemo* differs from *Ningulus* in having the postocellar bristles divergent and not parallel/slightly convergent (the orientation of the postocellars is an important character state used at various places in the key). Southern African Neminidae can, however, be recognised by the following combination of character states: second antennal segment with prominent, apically slender, inner distal lobe; two or more pairs of fronto-orbital bristles, if two pairs then not both reclinate; ocelli present; mesopleuron bare; scutellum unmodified, apical bristles erect; subcosta incomplete, weakly developed and evanescent apically; subcostal break present; humeral break absent; anal cell complete, apically truncate; second basal cell open distally; vein R_1 without dorsal setulae.

Neminidae are most likely to be confused with regional Neurochaetidae, but the only known African neurochaetid species, *Neurocytta prisca* (McAlpine, 1978), differs in having the third antennal segment deflexed; lacking a prominent, apically slender, inner distal lobe on the second antennal segment; having one dorsal and one more or less ventral costagial bristles; and unlike regional neminids, has the second basal cell closed apically.

MATERIALS AND METHODS

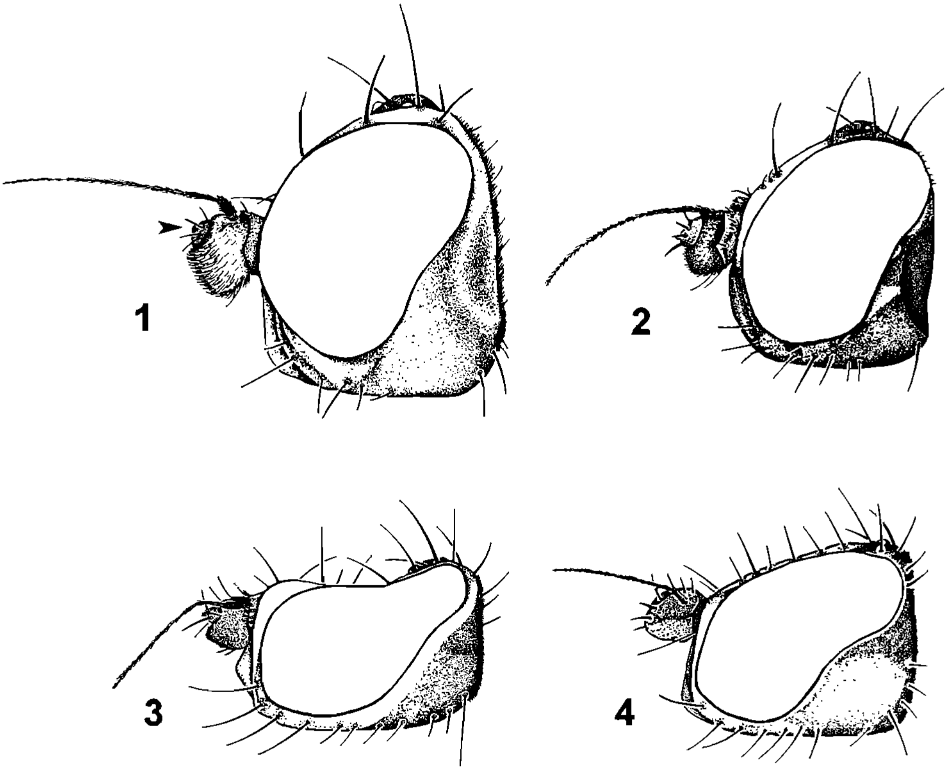
Specimens of Neminidae were examined from the following depositories (acronyms in parentheses):

Australian Museum, Sydney, Australia (AMSA)
Museum of Zoology, Lund, Sweden (MZLU)
Natal Museum, Pietermaritzburg, South Africa (NMSA)

Holotype label data are quoted verbatim, with supplementary information in square brackets; a slash denotes the end of a line of print and a semicolon separates different labels.

The abdomen was detached near its base, macerated in warm to hot KOH, and rinsed in alcohol. Dissected terminalia and associated abdominal parts were positioned in glycerine jelly for drawing, and were then stored in glycerine in a microvial beneath each source specimen. I was unable to dissect two of the unique holotypes, as it was likely that this would have resulted in unwarranted damage to the specimens concerned.

Bilaterally symmetrical structures are described in the singular. Total length was measured from the anterior margin of the second antennal segment to the abdominal apex, sometimes with compensation for curvature. Wing length was measured from the humeral crossvein to the wing tip. The measurements of the holotypes are given in brackets after the range for other specimens examined. The costal index is a measure of the distance along the costa between the apices of R_1 and R_{2+3} divided by the distance along the costa between the apices of R_{2+3} and R_{4+5}.



Figs 1–4. Head profiles of southern African Neminidae species, showing details of vestiture and pigmentation. 1. *Nemo capensis* sp. n. (inner distal lobe of second antennal segment arrowed). 2. *Nemo zuluensis* sp. n. 3. *Ningulus macalpinei* sp. n. 4. *Ningulus simatus* McAlpine, 1983.

TAXONOMY

Key to the genera and species of Southern African Neminidae

1. Head and thorax markedly depressed, head noticeably longer than high in profile (Figs 3 & 4). Four to six weakly developed and irregularly orientated fronto-orbital bristles (Figs 7 & 8). Postalar bristle present. Scutellum with two or three pairs of erect marginal bristles .... **Ningulus** McAlpine, 1983........2

– Head and thorax not depressed, head length subequal to or less than height in profile (Figs 1 & 2). Two well-developed fronto-orbital bristles, anterior bristle reclinate, posterior bristle reclinate to lateroclinate (Figs 5 & 6). Postalar bristle absent. Scutellum with only one fully erect pair of marginal bristles .... **Nemo** McAlpine, 1983......................3

2. Frons and dorsal eye margin with markedly excavate appearance in profile (Fig. 3). Two pairs marginal scutellar bristles. Wing with a few outstanding costal setulae near apex of R_{4+5} (Fig. 11); paired costagial bristles moderately developed, basal bristle half length of more apical bristle. [Chimanimani Mountains, Zimbabwe.] ....**Ningulus macalpinei** sp. n.

– Frons and dorsal eye margin not or slightly excavate in profile (Fig. 4). Three pairs marginal scutellar bristles. Wing without outstanding costal setulae near apex of R_{4+5} (Fig. 12); paired costagial bristles well developed, subequal in length. Male and female terminalia as in Figs 15 &18–19. [Central part of Eastern Cape Province, South Africa.]..................................**Ningulus simatus** McAlpine, 1983

3. Frons relatively broad, width near vertex 5.0–6.0 times that of ocellar tubercle (Fig. 5). Thoracic pleuron entirely pale. Scutellum with one pair marginal bristles (laterals absent). Femora entirely pale (yellow). Wing with costal break conspicuous and elongate (Fig. 9). [Southwestern Eastern Cape Province, South Africa.] ....**Nemo capensis** sp. n.

– Frons not broad, width near vertex about 3.0–4.0 times that of ocellar tubercle (Fig. 6). Thoracic pleuron (upper margin excepted) dark brown. Scutellum with two pairs marginal bristles (laterals present). Femora mostly pale to dark brown. Wing with costal break barely evident (Fig. 10). Male and female terminalia as in Figs 13–14 & 16–17. [Northern KwaZulu-Natal Province, South Africa.] ....**Nemo zuluensis** sp. n.

Genus *Nemo* McAlpine

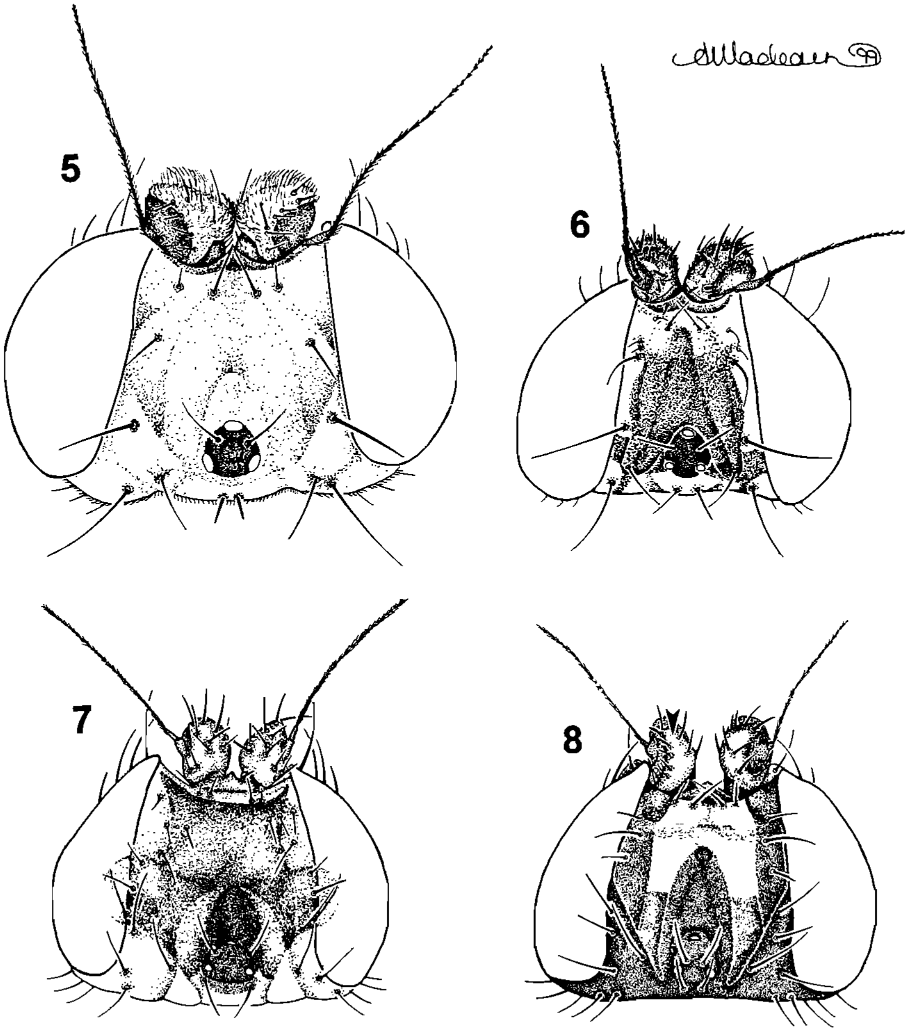
Nemo McAlpine, 1983: 60.

Type species: *Nemo corticeus* McAlpine, 1983, by original designation.

Nemo, as currently defined, includes six named species from eastern Australia and one species from Papua New Guinea (Evenhuis 1989), although another two to four Australian species (based on material I have seen in the Australian Museum) await description. The likely geographical range for the family in Australia is from northern Queensland south to Victoria, with an isolated population in southern South Australia. McAlpine (1985) placed the Australasian species into three species groups: the *arbelos* group for the single New Guinea species, the *centriseta* group for two species from tropical Queensland, and the *corticeus* group for four species from temperate southeastern Australia.

The discovery of two species of *Nemo* in South Africa is a zoogeographical surprise, although other acalyptrate genera with similar distributions are known. A good example is the clusiid genus *Tetrameringia* McAlpine,1960, which was originally described on two species from eastern Australia (Queensland and New South Wales), with Stuckenberg (1973) describing a third species from South Africa. Numerous new species of *Tetrameringia* are also known from Madagascar, and more southern African species almost certainly await discovery.

The two South African species of *Nemo* differ from the Australasian species in having the anterior fronto-orbital bristle reclinate (not proclinate) and the fronto-orbital bristles more widely separated. At first I considered that these character states



Figs 5–8. Heads in dorsal view, southern African Neminidae species, showing details of vestiture and pigmentation. 5. *Nemo capensis* sp. n. 6. *Nemo zuluensis* sp. n. 7. *Ningulus macalpinei* sp. n. 8. *Ningulus simatus* McAlpine, 1983 (inner distal lobe of second antennal segment arrowed). [In Figs 7–8, the fronto-orbital bristles are drawn to show relative strengths and positioning, and all are proclinate or reclinate.]

precluded placement in *Nemo*. However, given the known intrageneric variation in head chaetation in *Nemo*, I believe that placement of the South African species in *Nemo* is the most pragmatic option based on present evidence. *Nemo* (inclusive of undescribed Australian species) shows the following intrageneric variation in head chaetotaxy: inner vertical bristle sometimes absent; postocellar bristles sometimes absent; peristomal bristles and vibrissae variably developed. It should be noted too that the Madagascan genus *Nemula* Freidberg, 1994, also exhibits considerable variation in the development and position of the fronto-orbital bristles, with the well-developed posterior bristle reclinate or proclinate and a small anterior reclinate bristle sometimes present. Both South African species of *Nemo* have the second antennal segment with an apically slender inner distal lobe (see Figs 1 & 8); this lobe is completely absent in some of the Australian species.

Nemo capensis and *N. zuluensis* are not closely related species, suggesting that additional regional species await discovery. Although these species do not belong to any of the Australasian species groups, placement in a group or groups is deferred until more is known about the afrotropical neminids.

Nemo capensis sp. n.

Figs 1, 5 & 9

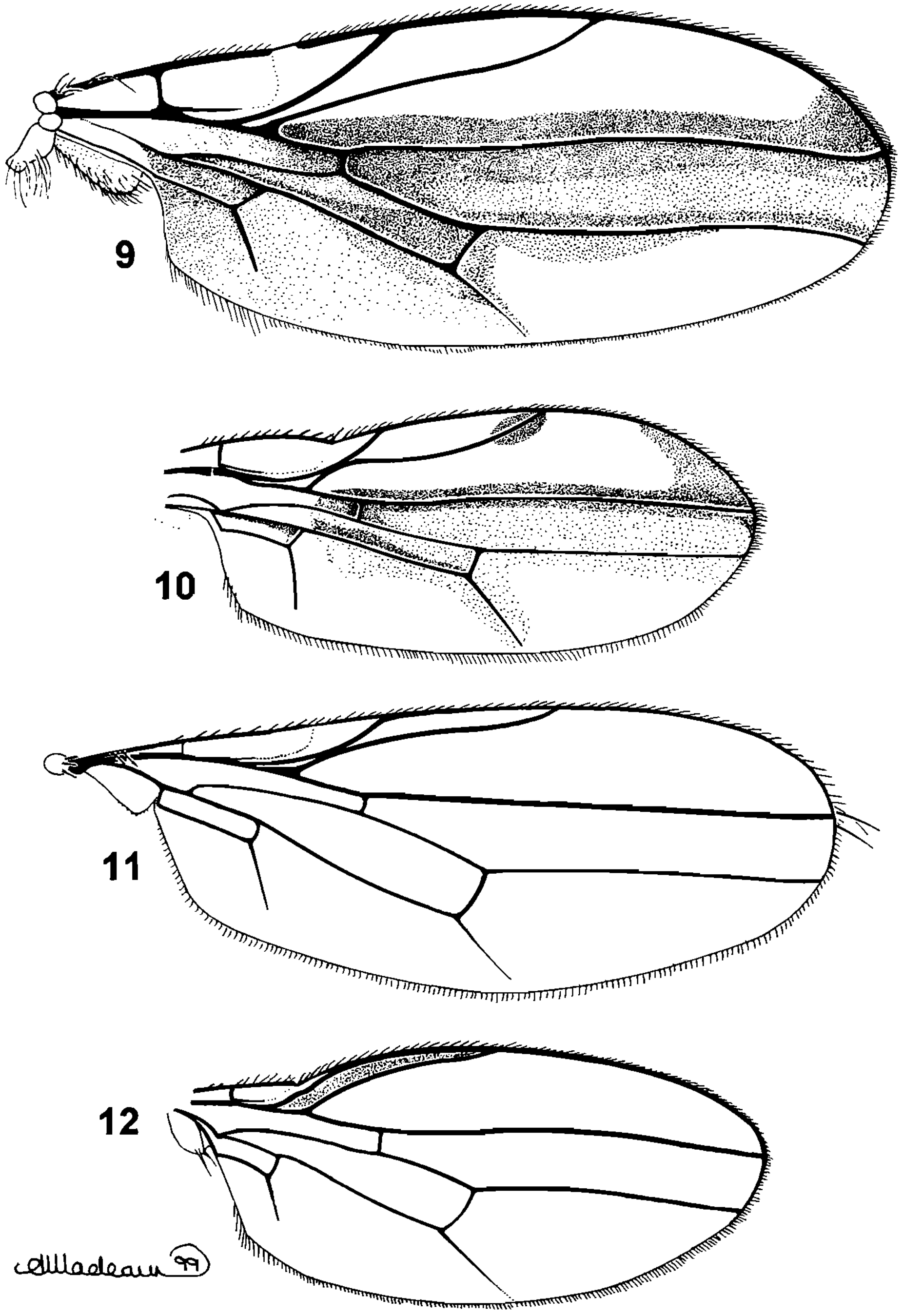
Etymology: The species name refers to the known provenance of this species, in the Eastern Cape Province of South Africa.

Holotype ♂: SOUTH AFRICA: *Eastern Cape*: 'RSA: Cape Prov. Bloukrans- / Pass, by Vargrivier / 33°57'S, 23°38'E, / 14–16.X.1994 loc.19 / leg. R. Danielsson'; 'HOLOTYPE ♂ / *Nemo capensis* / Barraclough, 1999' [rectangular card, red perimeter]. In good condition. In MZLU.

Description: Male. Size (mm): total length (2.4); wing length (2.1).

Colour and pollinosity: Head almost entirely bright yellow, but ocellar tubercle, arista and a small dorsomedial section of occiput dark brown to black; pollinosity indistinct, but evident on profrons and particularly facial region (silver). Thorax variably coloured, mesonotum mainly dark brown, but humeral callus and notopleural region distinctly yellow and prescutum paler brown, especially anteriorly and medially, pleuron mostly yellow except posterodorsally and below scutellum; legs entirely yellow; pollinosity not evident. Wing veins mainly dark brown, except humeral crossvein, subcosta, R_1, R_{2+3} and costa from wing base to halfway between insertion of R_{2+3} and R_{4+5} very pale yellow; membrane appearing broadly hyaline along anterior margin of wing, otherwise variably pale to medium brown infuscate, most noticeably around R_{4+5}, M, much of discal cell and anal cell. Abdomen mostly dark brown to black, sternites sometimes partly yellow-brown; pollinosity evident at certain angles, silver to brown.

Head (Figs 1 & 5): Frons relatively broad, noticeably broader at vertex, width here 5.0–6.0 times width of ocellar tubercle, region between ocellar tubercle and antennal bases slightly to moderately excavate. Profrons not or barely visible in profile. Eye virtually bare (a few scattered hairs visible at high magnifications), margin smoothly curved dorsally and anteriorly in profile. Antennal axis below eye centre in profile. Second antennal segment with prominent, apically slender, inner distal lobe, with moderately developed apical bristles. Face obvious in profile, lacking pruinescence, carina absent. Vibrissal angle inconspicuous, not warped forwards in profile. Epistomal bristles relatively few and short. Cheek depth about two-fifths that of third antennal segment in profile. Postocellar bristles weakly developed, divergent. Inner and outer vertical bristles present, outer bristle slightly longer and stronger. Two strong pairs fronto-orbital bristles, well separated by more than length of ocellar tubercle; anterior bristle reclinate (slightly lateroclinate) and inserted beyond the halfway point between anterior margin of ocellar tubercle and antennal bases;



Figs 9–12. Wings of southern African Neminidae species, showing details of vestiture and patterning (Figs 10–12 to scale, Fig. 9 is 62 % of scale size). 9. *Nemo capensis* sp. n. 10. *Nemo zuluensis* sp. n. 11. *Ningulus macalpinei* sp. n. 12. *Ningulus simatus* McAlpine, 1983.

posterior bristle lateroclinate although also posteriorly directed, about 1.5 times length of anterior bristle and inserted at anterior margin of ocellar tubercle. Interfrontal bristles well developed.

Thorax: Anterior notopleural bristle (yellow) posteriorly directed and half length and strength of posterior notopleural bristle (black), which is inserted on a small nodular protrusion. Only 1 strong dorsocentral bristle, positioned towards scutellar suture near wing base, in front of this a mostly uniseriate series of setulae extending to well in front of transverse suture, where they are more clustered. Acrostichal setulae reduced and few, restricted to prescutum. Scutellum with only apical pair of marginal bristles present, these erect, divergent and well developed, about 1.5 times length of posterior notopleural bristle. Fore tarsus with no segments noticeably thickened. Hind femur about 1.2 times length of mid femur. Wing (Fig. 9) with costal index .73; apical costagial bristle elongate, more than twice length of basal bristle; subcostal break conspicuous and elongate; apices of R_{4+5} and M_1 slightly curved anteriorly and posteriorly respectively; basal crossvein not apparent.

Abdomen: Elongate, broadest at segment two and apically tapered.

Postabdomen: Not dissected (unique specimen).

Female: Unknown.

Remarks: This remarkable, pallid species is known only from the unique holotype. Nothing is known about host plant associations, but according to the collector (Danielsson, *pers. comm.*), it was swept from damp vegetation near a river. It should be noted that the wild banana *Strelitzia nicolai* does not occur at the type locality, although another species, *S. alba* (L.f.) Skeels, is present in the vicinity. *Nemo capensis* is the only species in the genus which lacks lateral scutellar marginal bristles (an autapomorphy); it also has an unusually elongate and conspicuous subcostal break.

Nemo zuluensis sp. n.

Figs 2, 6, 10, 13–14, 16–17

Etymology: The species name refers to the known provenance of this species, in the KwaZulu-Natal Province of South Africa.

Description: Male: Size (mm): total length 1.6–1.8 (1.8); wing length 1.4–1.5 (1.5).

Holotype ♂: SOUTH AFRICA: *KwaZulu-Natal*: 'S AFRICA : KZ-Natal #95 / Richard's Bay / 28°46'S : 32°03'E / Date: 16.xii.1997 / Coll: B.R. Stuckenberg / On leaves of wild banana'; 'HOLOTYPE ♂ / *Nemo zuluensis* / Barraclough, 1999' [rectangular card, red perimeter]. In good condition. In NMSA.

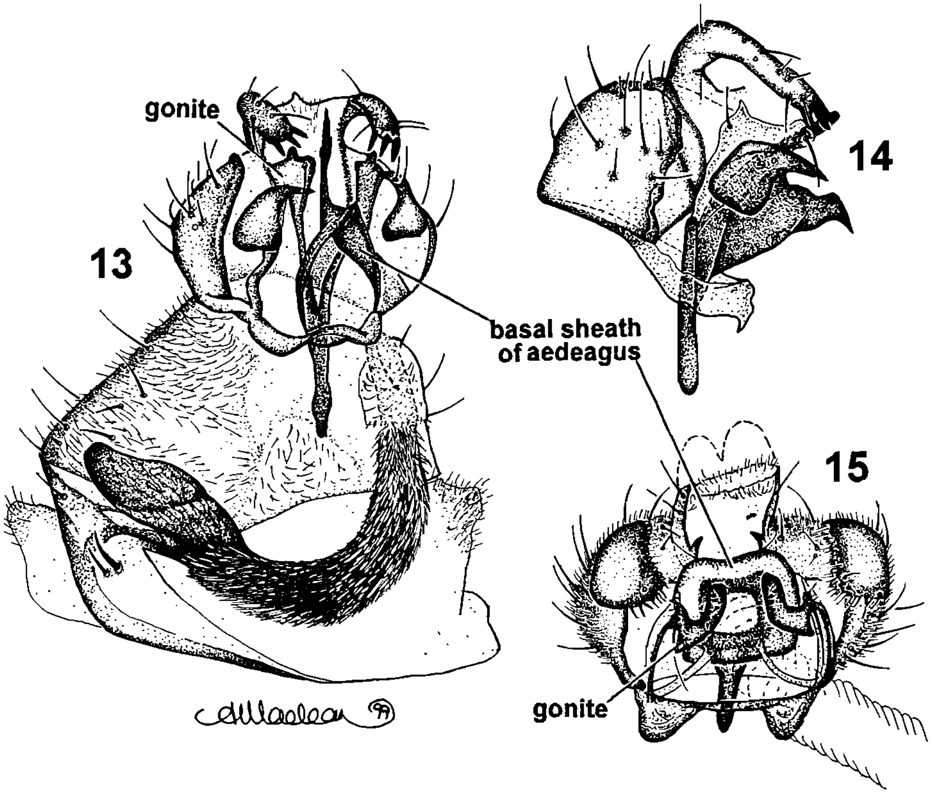
Colour and pollinosity: Head mostly pale to dark yellow (noticeably pale on profrons), but ocellar tubercle dark brown to black, with orbital plates and sometimes intervening cuticle, entire arista and face, and posterior half of cheek pale to medium brown, and most of occiput (dorsal margin excepted) dark brown; pollinosity indistinct, silver to yellow when apparent. Thorax mainly medium to dark brown, but humeral callus, notopleural region, upper mesopleuron and upper pteropleuron strikingly paler (cream to yellow); legs mainly yellow-brown, but fore and hind femora dark brown on apical four-fifths to entire extent and entire extent respectively and mid femur pale to medium brown on basal half; pollinosity not usually evident. Wing veins variably medium and dark brown; membrane appearing mainly hyaline, but indistinctly pale brown infuscate in the following areas: apex of R_{2+3}, around r-m crossvein and R_{4+5}, sometimes along costal margin from about halfway between apex of R_{2+3} and R_{4+5} to apex of R_{4+5}, in posterior part of discal cell and sometimes part of anal cell. Abdomen mostly dark brown, although terminalia sometimes yellow-brown or partly so; pollinosity indistinct.

Head (Figs 2 & 6): Frons moderately broad, slightly to noticeably broader at vertex, width here about 3.0–4.0 times width of ocellar tubercle, region between ocellar tubercle and antennal bases slightly to moderately excavate. Profrons not or slightly visible in profile. Eye completely bare, margin smoothly curved dorsally and anteriorly in profile. Antennal axis just below eye centre in profile. Second antennal segment with prominent, apically slender, inner distal lobe, with moderately to well developed bristles. Face obvious in profile, lacking pruinescence, carina absent. Vibrissal angle inconspicuous, not warped forwards in profile. Epistomal bristles usually relatively profuse and well developed. Cheek depth about one- to two-fifths that of third antennal segment in profile. Postocellar bristles weakly developed, strongly divergent. Inner and outer vertical bristles present, outer bristle usually slightly longer and stronger. Two strong pairs fronto-orbital bristles, well separated by more than length of ocellar tubercle; anterior bristle reclinate and inserted almost two-thirds distance between anterior margin of ocellar tubercle and antennal bases; posterior bristle lateroclinate although also slightly posteriorly directed, about 1.5 times length of anterior bristle and inserted at anterior margin of ocellar tubercle. Interfrontal bristles well developed.

Thorax: Anterior notopleural bristle (pale to black) posteriorly directed and half length and strength of posterior notopleural bristle (black), which is inserted on a small nodular protrusion. Only 1 strong dorsocentral bristle, positioned towards scutellar suture near wing base, in front of this a uniseriate series of minute setulae extending to well in front of transverse suture. Acrostichal setulae minute and few, restricted to prescutum or extending to just posterior to transverse suture, or sometimes to position of dorsocentral bristle, typically not uniseriate. Scutellum with apical and lateral pairs of scutellar marginal bristles present; apical bristles erect, divergent and well developed, about 2.0 times length of posterior notopleural bristle; lateral bristles upwardly and backwardly directed, slightly shorter than apicals. Fore tarsus with no segments noticeably thickened. Hind femur about 1.3–1.5 times length of mid femur. Wing (Fig. 10) with costal index .63–.71; apical costagial bristle elongate, more than twice length of basal bristle; subcostal break inconspicuous and short; apices of R_{4+5} and M_1 both straight; basal crossvein not apparent.

Abdomen: Moderately elongate, broadest at segment 2 or 3, apically tapered.

Postabdomen (Figs 13–14): Tergite 5 weakly sclerotised, lacking vestiture, mostly concealed beneath tergite 4. Epandrium as figured, depth in profile about 1.5 times length, surface with obvious setulae. Cerci extraordinarily elongate and slender, each cercus extends posterior to epandrium (these sections of cercus medially fused by weakly sclerotised cuticle) and is then directed at a right angle directly downwards in profile, downwardly directed section outwardly curved and about twice length of



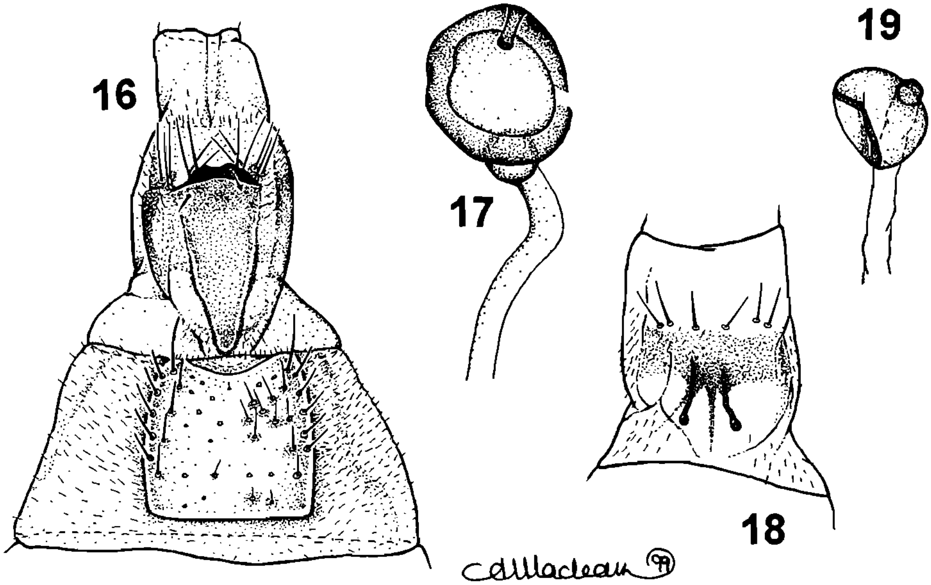
Figs 13–15. Male postabdomen and terminalia of southern African Neminidae species, showing details of all vestiture. 13–14. *Nemo zuluensis* sp. n. 13. Ventral view of postabdomen and terminalia. 14. Terminalia, profile view (1.4 times magnification of Fig. 13). 15. *Ningulus simatus* McAlpine, 1983, apical view of male terminalia (cerci broken, same scale as Fig. 14).

posteriorly directed section, a few short setulae irregularly scattered along length of cercus, but extreme apex with 3 prominent, stubby, pointed teeth. Surstylus broad basally, dorsally arched and narrowed to sharply pointed apical region, no noticeable setulae. Gonite with substantial inner conical section with small nodule on apical margin and downwardly directed setula just below this; outer section slender and apparently sinuous and joined to hypandrium. Hypandrium slender, albeit broader laterally. Aedeagal apodeme slender and short, slightly longer than epandrium in profile, extending well beyond hypandrium. Basal sheath of aedeagus heavily sclerotised, sharply angled and ridged dorsally, with dorso-basal section extended into a slender, upwardly directed protrusion with its apex between cerci. Aedeagus relatively short and slender, length less than twice that of terminalia in profile; basal one-fifth transparent and membranous with no vestiture; middle three-fifths profusely covered with short, flattened, apically pointed setulae; apical one-fifth somewhat swollen subapically, lacking vestiture, but with noticeable ridges and corrugations.

Female: Size (mm): total length 2.2; wing length 1.5.

Thorax: Costal index .71. Brown infuscation of wing more extensive and darker.

Postabdomen (Figs 16–17): Sternite 4 narrow, mostly covered with setulae. Sternite 5 strongly developed, in the form of a moderately pigmented cone-shaped structure, with broader apical margin strongly pigmented medially; a row of well-developed setulae positioned just distad of darkly pigmented section of sternite (Fig. 16). Two spermathecae, each bare (Fig. 17), brown pigmented (darker on periphery) and apparently circular (although possibly indented at pole opposite entry-point of spermathecal duct) with basal nodule at point of insertion of spermathecal duct.



Figs 16–19. Female terminalia and spermathecae of southern African Neminidae species. 16–17. *Nemo zuluensis* sp. n. 16. Ventral view of sternites 4 and 5, showing their shapes and vesiture. 17. Spermatheca (partly broken) and spermathecal duct. 18–19. *Ningulus simatus* McAlpine 1983. 18. Ventral view of sternite 5. 19. Spermatheca and spermathecal duct.

Paratypes: 3♂ 1♀, same data, except 1♂ collected on 16–17.i.1998 (NMSA).

Remarks: This species has been collected from the same *Strelitzia nicolai* plant on two occasions only, at Richard's Bay on the northern KwaZulu-Natal coast. According to Stuckenberg (*pers. comm.*), the type locality is on sloping ground surrounding a small freshwater lake on the inland side of thickly-vegetated dunes. The site is partly enclosed by suburban development, park-like and apparently artificially maintained, with open expanses of short grass, scattered indigenous hardwood trees, and isolated stands of *Strelitzia nicolai* trees. The area would originally have been covered with dense bush or sand forest of the sort still common along the coast in this district.

According to Stuckenberg (*pers. comm.*), the flies were only found on the upper surfaces of fresh, clean, pale green leaves of *Strelitzia nicolai*; these young leaves were erect or nearly so. The flies were not seen on the older, darker green leaves which extend more horizontally or droop; they sat in a vertical, head-up posture, with the body close to the leaf surface and the legs held close to the body.

A remarkable character state of *N. zuluensis* is the unusually elongate, slender and mostly widely separated cerci (see Figs 13 & 14), each with several stubby apical teeth. In all other described *Nemo* species, the cerci are typically closely approximated and relatively short.

Genus *Ningulus* McAlpine

Ningulus McAlpine, 1983: 73.

Type species: *Ningulus simatus* McAlpine, 1983, by monotypy.

Ningulus is probably a southern African endemic. A morphologically striking genus, its monophyly is demonstrated by the following synapomorphies: head and thorax strongly flattened, four or more fronto-orbital bristles developed, and scutellar marginal bristles all erect and not or little tapered. There are two spermathecae (the female postabdomen was not dissected by McAlpine 1983).

Ningulus macalpinei sp. n.

Figs 3 & 7

Etymology: The species name honours the collector of the holotype, Dr D. K. McAlpine, who has also been responsible for much of the ground-breaking work on the Neminidae.

Holotype ♂: ZIMBABWE: 'ZIMBABWE: / 'Banana Grove' / Chimanimani / National Park'; 'On *Strelitzia* / 23 Sept. 1990 / D.K. McAlpine'; '*Ningulus* / n. sp.'; 'HOLOTYPE ♂ / *Ningulus macalpinei* / Barraclough, 1999' [rectangular card, red perimeter]. In good condition. In AMSA.

Description: Male: Size (mm): total length (1.8); wing length (1.7).

Colour and pollinosity: Head mainly dark yellow-brown, but much of occiput, posterior part of cheek, and most of frons brown, with ocellar tubercle and surrounding cuticle dark brown and orbital plates noticeably darker; pollinosity mostly indistinct, but relatively profuse and yellow on anterior half of frons. Thorax with mesonotum dark brown, humeral callus distinctly paler (dark yellow) and pleuron brown albeit somewhat paler dorsally; legs mostly yellow-brown, but dorsal half of fore and hind femora medium to dark brown; pollinosity not evident. Wing veins yellow, membrane appearing entirely hyaline. Abdomen irregularly dark yellow-brown to brown, sternites evidently dark yellow-brown; pollinosity largely absent.

Head (Figs 3 & 7): Eye with dorsal margin and adjacent area of frons markedly excavate at about mid-length, such that fronto-orbital bristles inserted in excavated section of frons are directed towards each other and have crossed apices. Five to six fronto-orbital bristles, variably proclinate or reclinate. Profrons with interfrontal bristles relatively widely separated, not noticeably convergent or crossed apically.

Thorax: Mesonotum with indistinct pubescence. Two marginal pairs erect scutellar bristles, subapical pair about two-thirds length of apical pair. Wing (Fig. 11) relatively narrow and elongate; costal index .62; costagial bristles well developed, subequal in length; costa with several elongate setulae near apex of R_{4+5}.

Postabdomen: Not dissected (unique specimen).

Female: Unknown.

Remarks: *Ningulus macalpinei* was collected from an apparent *Strelitzia nicolai* plant in afromontane forest in the Chimanimani National Park of the Eastern Highlands of Zimbabwe. The neurochaetid species *Neurocytta prisca* McAlpine, 1978, occurs sympatrically on the same host plant. It should be noted that the same *Strelitzia* species occurs along the coastal belt from southern Mozambique, through KwaZulu-Natal to about East London in the Eastern Cape Province (Coates Palgrave 1977: 90), and it is possible if there is a strong host plant association, that *Ningulus macalpinei* might also be discovered in these coastal regions.

Although the holotype of *N. macalpinei* may be slightly teneral, the excavation of the dorsal eye margin seems unrelated to this.

Ningulus simatus McAlpine

Figs 4, 8, 12, 15, 18–19

Ningulus simatus McAlpine, 1983: 76; Duxbury & Barraclough, 1994: 36.

Holotype ♀ : SOUTH AFRICA: *Eastern Cape*: 'Grahamstown / Albany Dist. C.P. [Cape Province] / 30-9-53' [label with horizontal black line across top]; 'HOLOTYPE / *Ningulus* / *simatus* D. McAlpine / D. K. McAlpine det. 1983'; 'HOLOTYPE' [black print on red card]. In fair condition, except head lost, as are left mid and hind legs. In NMSA.

Redescription: Male: Size (mm): total length 1.5–1.8; wing length 1.3–1.5.

Colour and pollinosity: Head partly dark yellow-brown, but entire occiput, posterior part of cheek, and most of frons brown, with ocellar tubercle and surrounding cuticle and orbital plates dark brown; pollinosity mostly indistinct, but apparently present and yellow on anterior half of frons and sometimes evident on occiput, but then silver. Thorax with mesonotum dark brown to black, humeral callus usually distinctly paler (dark yellow) and pleuron brown; legs mostly yellow-brown, but apical two-fifths to half of fore femur sometimes partly pale brown, apical two-fifths of mid-femur sometimes pale brown, apical two-thirds to six-sevenths of hind femur medium to dark brown and mid and hind tibiae sometimes partly brown; pollinosity silver, usually evident only on upper pleuron. Wing veins yellow, membrane appearing entirely hyaline, except usually for indistinct pale brown infuscation in cell r_1. Abdomen irregularly yellow-brown to brown, sternites evidently dark yellow-brown; pollinosity largely absent.

Head (Figs 4 & 8): Eye with dorsal margin not excavated at about mid-length, although adjacent area of frons sometimes excavate. Four to six fronto-orbital bristles, variably proclinate or reclinate. Profrons with interfrontal bristles not widely separated, strongly convergent and/or crossed apically.

Thorax: Mesonotum without pubescence. Three marginal pairs erect scutellar bristles (supernumerary basal pair sometimes present), subapical pair about two-thirds to three-quarters length of apical pair and basal pair about half length of apical pair. Wing (Fig. 12) somewhat short and broad; costal index .29–.44; costagial bristles moderately developed, more basal bristle half length of apical bristle; costa without several elongate setulae near apex of R_{4+5}.

Postabdomen (Fig. 15): Epandrium covered with obvious, short setulae, basal margin appearing somewhat flattened in dorsal view (see also McAlpine 1983: Fig. 21). Cerci fused, bilobed apically, length about twice that of surstylus in dorsal view. Surstylus short and rotund in profile, length about 1.5 times maximum width and reaching just more than twice length of epandrium in profile, apical region relatively smoothly rounded, dorso-apical margin with row of inconspicuous, short, stubby teeth. Hypandrium as figured, with conspicuous bilobed gonite attached on each side, inner lobe of gonite large and thumb-like with a few setulae on distal half, outer lobe a short tubercle with elongate, downwardly directed bristle. Aedeagal apodeme short and slender, extending only a little beyond hypandrium. Aedeagus (see McAlpine 1983: Fig. 20) well developed, length more than 3.0 times that of epandrium; basal one-third a simple, bare, transparent cylinder; middle one-third mostly covered with dense cluster of flattened spinules with bluntly to sharply pointed apices, spinules gradually increasing in length on more distal part of this section; distal one-third without conspicuous vestiture, but internally with complexly convoluted, dark structure.

Female: Size (mm): head and thorax length 1.8–1.9 (1.9); wing length 1.4–1.6 (1.6).

Thorax: Costal index .28–.57.

Postabdomen (Figs 18–19): Sternite 5 weakly developed, in the form of a weakly pigmented band across mid-length of segment, with two slender, dark, apically nodular-shaped areas extended towards basal margin from near mid-line; a row of moderately developed bristles positioned just distad of pigmented section of sternite (Fig. 18). Two spermathecae, each smooth (Fig. 19), brown pigmented and cup-like with basal nodule at point of insertion of spermathecal duct.

Other material examined: SOUTH AFRICA: Paratype ♂, Hogsback, North of Alice, 2–3 November 1964, B. & P. Stuckenberg (genitalia on slide) (NMSA); 3♂ 4♀, Hogsback (North of Alice), 3227CA, 2–3 November 1964 (NMSA). Some of these latter specimens, damaged by dermestids, were recently discovered in the Natal Museum collection.

Remarks: Nothing is known about the host plant(s) of this species; the putative host plant *of N. macalpinei*, *Strelitzia nicolai*, does not occur at the two interior montane localities where *N. simatus* has been collected (Coates Palgrave 1977: 90).

According to Stuckenberg (*pers. comm.*) there is a strong possibility that the 'Grahamstown' provenance of the holotype of *simatus* is incorrect. The holotype was likely sourced from a Rhodes University student's collection, and was probably mislabelled and in reality collected from the Hogsback area.

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